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## THE ABORIGINAL RUINS AT SILLUSTANI, PERU

By ADOLPH F. BANDELIER

The hacienda of Umayo lies five leagues in a northerly direction from the little city of Puno, capital of the department of that name in southeastern Peru, and not far from the northwestern shore of Lake Titicaca. Its elevation above the level of the Pacific ocean is nearly 13,000 feet. Situated on a narrow neck of land between two extensions of the Umayo lagoon, it nestles at the base of a rocky promontory called Sillustani, or Silustani. The origin of this name is not clear. If *Sillustani*, it may be derived from *Sillu*, 'Nail,' in Quichua as well as in Aymará. Before the conquest the territory was held by the Colla, a large group of Aymará Indians; to-day Quichua Indians inhabit it. It may be that *Sillustani* is the proper orthography and the term is of Aymará origin; but so far as known the place is not mentioned by name in any early Spanish document, printed or in manuscript, hence it may be a Quichua term introduced subsequent to the sixteenth century, when the Quichua Indians began to encroach on the Aymará range.<sup>1</sup>

The promontory called Sillustani is a plateau of red sandstone, with a number of blocks of volcanic material, possibly andesite, scattered over its surface. Its elevation above the hacienda is 200 feet, and it covers a surface of approximately 110 acres. The accompanying plan (plate VII, 3) will give a better idea of the shape and topography than a verbal description. Shrubbery is scattered over the slopes descending to the east and north, and along the

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<sup>1</sup> At the present time the boundary (an ideal one) between the two linguistic stocks extends from east to west through the market place at Puno. North of this line are the Quichua, south the Aymará. The local names north of Puno to a considerable distance are Aymará — even the names of prominent peaks, such, for example, as the Kunnu-Rona, at Santa Rosa. As is often the case, the word appears to be composed of both languages, *kunnu* meaning 'snow' in Aymará, and *rona* or *runa* being the Quichua name for 'man.' The form of the peak fully justifies the etymology. That the Colla, who held the site of Sillustani at the time of Pizarro, were Aymará, is well known.



low natural steps traversing the plateau like faint contour lines. The southeastern point is highest; it is rocky and abrupt to the south and east.

The great altitude above sea level gives to Sillustani a chilly climate. The proximity of Lake Titicaca and the waters of Umayo, which almost surrounds the peninsula, render the atmosphere very moist, and frequent thunderstorms occur at all seasons.<sup>1</sup> At the foot of the plateau, near the hacienda, and in the surroundings in general, the only crops are potatoes, oca, and barley, the last-mentioned, of course, being of Spanish introduction. Maize cannot thrive on account of the cold. Near the hacienda, as well as on the small island in Lake Umayo, a few wild olive trees grow, but as elsewhere on the Puna they are stunted and scrubby. Everywhere the country traversed from Puna, and which may be viewed for some distance from the plateau, is bleak and apparently deserted; but ruined, tower-like structures loom up on monotonous hills. The barrenness of the Puna has made of it a dismal landscape indeed.<sup>2</sup>

The peninsula of Sillustani has been known for some time as the site of Indian ruins of remarkable construction, and about which no information was obtainable. As before remarked, the name Sillustani (or Silustani), so far as known, does not appear in any Spanish source. Rivero and Tschudi, in their *Peruvian Antiquities*, mention them and give a picture that is very inadequate.<sup>3</sup> The best description is that by E. G. Squier in his work on Peru, and his views of the ruins are correct.<sup>4</sup> Charles Wiener hardly deserves to be alluded to, his views of the towers of Sillustani being as inaccurate as the little he tells about them.<sup>5</sup>

<sup>1</sup> During our first stay at Umayo we had a thunderstorm nearly every night, although it was winter (June). Each storm discharged one or more thunderbolts on the cliffs east of the hacienda. The people of Umayo, as well as those of Puno, assured us that this was always the case.

<sup>2</sup> Cieza de León (*Primera Parte de la Crónica del Perú*, in Vedia, *Historiadores primitivos de Indias*, vol. II, cap. XCIX, p. 442) says of the Puna in that region: "Caminando con viento es gran trabajo andar por estos llanos del Collao; faltando el viento y haciendo sol da gran contento ver tan lindas vegas y tan pobladas; pero, como sea tan fría, no da fruto el maíz ni hay ningún género de árboles, antes es tan estéril, que no da frutas, de las muchas que otros valles producen y crían."

<sup>3</sup> See the Atlas to *Antigüedades peruanas*, lámina, and text pp. 293, 326.

<sup>4</sup> *Peru*, cap. XX, pp. 376-384.

<sup>5</sup> *Pérou et Bolivie*, pp. 386 and plate.

Ascending from the hacienda in the direction of the highest point of the peninsula, we are soon among vestiges of artificial facings of natural gradients, somewhat leveled by the hand of man so as to represent broad terraces, or *andenes*, common in Peru, and modern as well as ancient. There are several of these wide steps, but while there is much débris of fallen masonry, only a few huge blocks, set into the thin soil at intervals, remain to indicate that there may have been something akin to parapets raised along the edge of the facings. There are places where a narrow entrance may have existed, but the remains have been too much disturbed to permit definite conclusions on this point. The last third of the ascent is steep, and we noticed each time we went to the ruins, on every morning for seven days, that not only respiration, but the whole organism was affected, and this feeling of mountain sickness (called *soroche* in Bolivia and *veta* in northern Peru) continued as long as we remained on the plateau. A cleft (plate VII (3), *e*) with traces of stone steps by which access to the top is gained, is flanked on the right by two small round towers; on the left a quadrangular structure occupies the point, and beyond it, along the edge of the cliff, follows a line of circular edifices terminating in the largest structure of all, a stately inverted and truncated cone, one side of which has been torn down. As far as this *chullpa*<sup>1</sup> the cliff has a low rim and the terrace below is fairly well preserved. South of this gateway the cliff becomes steeper and indented, while at the same time it recedes to the southwest until it reaches another crevice with a graded ascent to the plateau. To the left of this ascent stand two handsome stone towers. Westward along the southern edge of the peninsula, it is very rocky and steep, in

<sup>1</sup> The late Jimenez de la Espada has given the correct etymology of the term *chullpa*. He says in his note (1) to page 236, vol. IV, of the *Historia del Nuevo Mundo*, by F. Bernabé Cobo, S. J.: "Llámanse generalmente *chulpas* estas torres mortuarias, en mi concepto con impropiedad; porque *chullpa* es voz aimará que significa la envoltura tejida de *ichhu* ó de *tatora* a modo de cesto, en que enfundaban los cadáveres, como se hace con algunas vasijas, ajustándola al cuerpo y cabeza y dejando la cara solamente al descubierto." In other words *chullpa* means "the sack or bag of grass in which the bodies were placed for sepulture." This is fully confirmed by Bertonio, *Vocabulario*, 1612 (part II, p. 92): *Chullpa* — "entierro o seron donde metian sus difuntos." From the bag or sack the name passed, through misunderstanding, to all buildings containing dead bodies, buried, after the Aymara custom, in such pouches of straw.

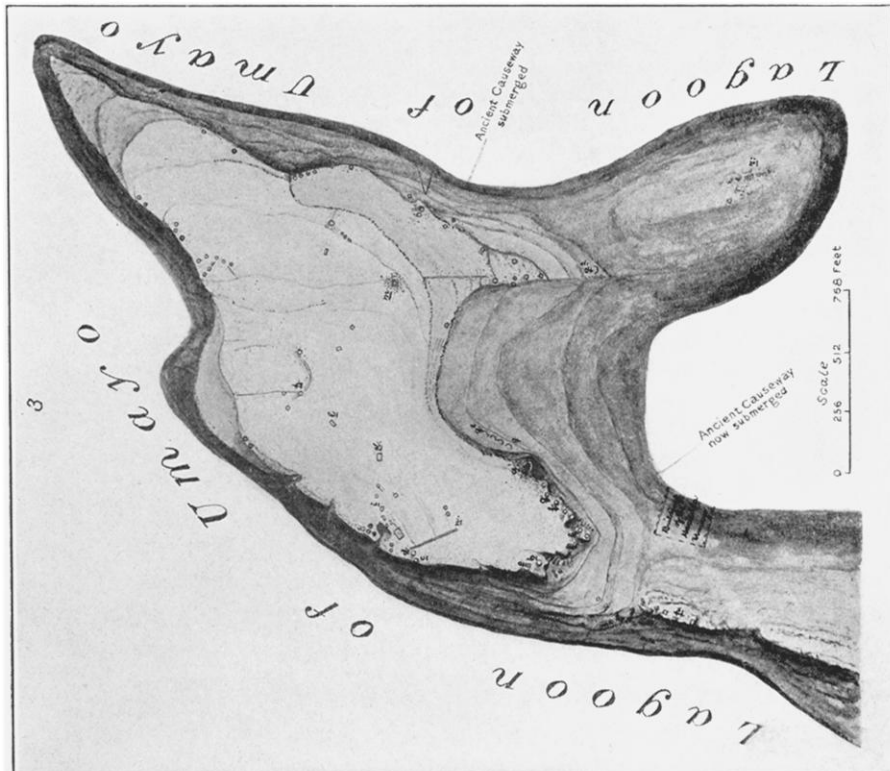
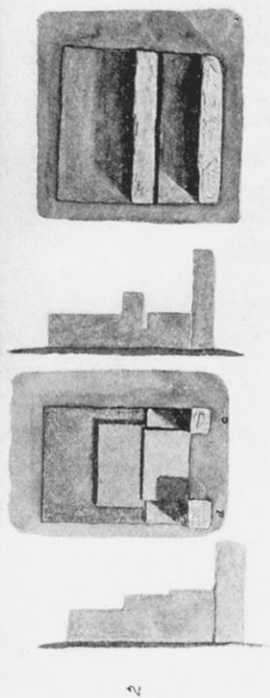
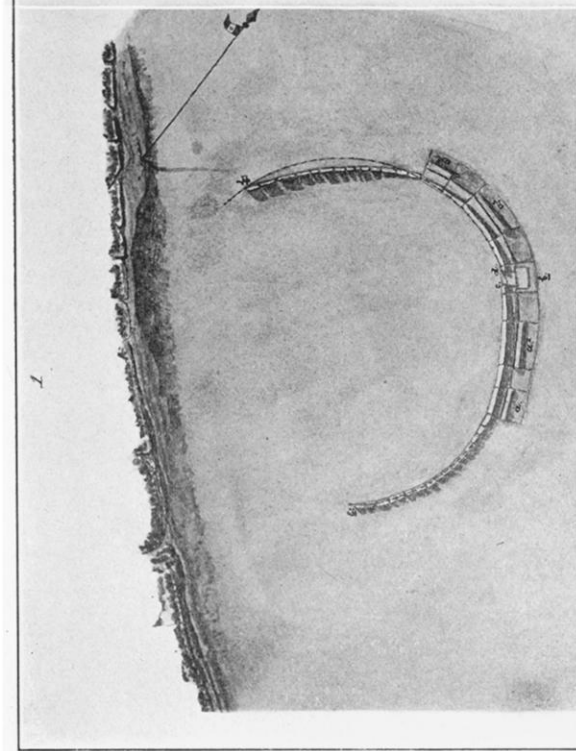
places vertical; yet there is hardly any natural obstacle to scaling the rocks from the lake side, and if there were artificial defenses they have completely disappeared. Along the edge, and sometimes almost on the brink, towers and quadrangles are disposed at varying distances from each other. They form two larger groups and three smaller ones, the last one of which stands some 750 feet from the extreme northwestern point of the peninsula.

The central area of the plateau has fewer buildings. With the exception of the round ones at *h* (plate VII, 3) and a group lying west of *m*, they are quadrangular. But the northern edge, from a point 500 feet east of the western end to its eastern extremity, supports nineteen round structures, the most easterly group of which is connected with a wall, more than 280 feet long, running west to east, toward the edifice *m*. Near the lake shore and on the northeastern spur of the peninsula is a group of much ruined structures, and an isolated tower rises near the northern beach. In all (except the vestiges of what appeared to be small rectangular cysts, which we were not allowed to open), the peninsula at Sillustani was found to support at least ninety-five buildings, more than eighty of which are circular, not including scattered walls and the so-called "sun circles" of which there are at least five.

It will be observed that the majority of the towers stand on the edge of the plateau, while most of the rectangular structures are away from it. The largest and best built occupy prominent positions. Low and indifferently constructed walls exist in connection with one or the other group of towers, and in a few places they also extend along the brink of the plateau. But, as already remarked, nowhere is there a trace of breastworks or walls of circumvallation. The *andenes* on the eastern flanks of the mesa (for the plateau is but a mesa) recall the terraced lines around ancient villages in the Bolivian cordillera, and could have afforded a stand for warriors fighting with the sling, but without protection. This is in harmony with the mode of warfare and the weapons of the aborigines.<sup>1</sup>

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<sup>1</sup> The use of the sling made ramparts inconvenient, whereas a platform that placed the defenders on a plane higher than the assailants was an advantage. The ruins in the cordillera of Bolivia nearly always show such a platform, or a series of platforms, with hardly any trace of parapets. Wood or brush were out of the question.



# ABORIGINAL RUINS AT SILLUSTANI

1. Stone "circle" (the dotted line indicates the deviation from the true arc); scale, 1 in. = about 23 ft. 2. Structural details of the stone-work of the stone circle; scale 1 in. = 5½ ft. 3. General plan of the Sillustani promontory, showing the distribution of its aboriginal remains.

East of the peninsula, on the ridge due south of the hacienda, are remains of quadrangular buildings (*p*) overlooking the lake from a sharp crest. Towers, not so well constructed as those on the mesa, are scattered through the valley east of the hacienda and on slopes and ridges far and near. They are usually accompanied by artificial terraces, but it is difficult to tell whether these are modern or ancient.

Of the circular edifices there are two kinds, according to the material and mode of construction. There is the circular tower, narrower at the base than at the top and built of stones carefully rubbed to smoothness. Of these only a few are complete. The largest one is marked *a* on the general plan. It is the best example of the circular stone structures at Sillustani.

This *chullpa*, which stands on a projecting point due west of the hacienda, is a most conspicuous object. Its height is 35 feet, its diameter at the base 24 feet, and at the top 28 feet, so that it presents the appearance of a steep, inverted, truncated cone. It is faced outside with handsomely cut blocks of andesite. As shown by the drawing (plates VIII, 1; IX, 13), this outer shell consists of two tiers. The lower tier, which rests on the surface of the rock, is 25 feet high, 8 feet thick at the base, and 9 feet at the top; it is made of blocks superposed without binding material, is wider at the top than below, and no attention was paid to breaking joints. The inner surface of this lower tier is vertical. Upon this main structure rests another of cut stone, of less thickness than the lower one and forming the upper tier to the full height of the *chullpa*. So much for the outer shell. With the surface inclining outward, and the projecting cornice, it was impossible to reach the top of the edifice from without.

The interior of this *chullpa* (pl. VIII, 1), as of all the others at Sillustani (pl. VIII, 2, 3, 4), is divided into two sections, corresponding to the exterior divisions. As far as or nearly to the top of the main tier, a dome-shaped chamber is built of common rubble. Sixteen feet above the floor, in the apex, is an aperture two feet in diameter, with a rim of projecting slabs, above which the opening widens for five feet or more. The upper tier has no core of rubble or other material, nor was it provided with windows or loopholes; the top is open, but the hole in the core was probably originally covered with slabs.



At the base of the chullpa is a tiny rectangular entrance measuring about two feet in width and height (plate ix, 3, 4, 6, 7, 8). I could not crawl into any of these chullpas myself, and my wife had considerable difficulty in entering even the largest of them from the base. These structures were absolutely empty, nor could I learn that anything had ever been found in them.

The upper tier of this chullpa was probably never closed; only the lower chamber could have been used. It is not large, since the facing and the core have an aggregate thickness of eight feet below and ten feet above, so that two-thirds of the diameter of the structure are occupied by its walls.

Chullpa *c* (plate viii, 2) also is completed to the top. Like the former, it stands on the brink of the plateau, but on the southern instead of on the eastern edge. It is much smaller than chullpa *a*, its elevation being only 22 feet, of which 16 feet form the lower or main part. Its width at the bottom is 16 feet, at the top 18 feet; its other dimensions are proportional. Like *a*, the upper chamber has for its sides only the armor of polished andesite blocks. There is a neck through the upper part of the core down to the hole in the apex of the main chamber; the hole has the same dimensions as that in chullpa *a*. These interior chambers with the necks recall the form of a bottle.<sup>1</sup>

Several features of these chullpas attract attention:

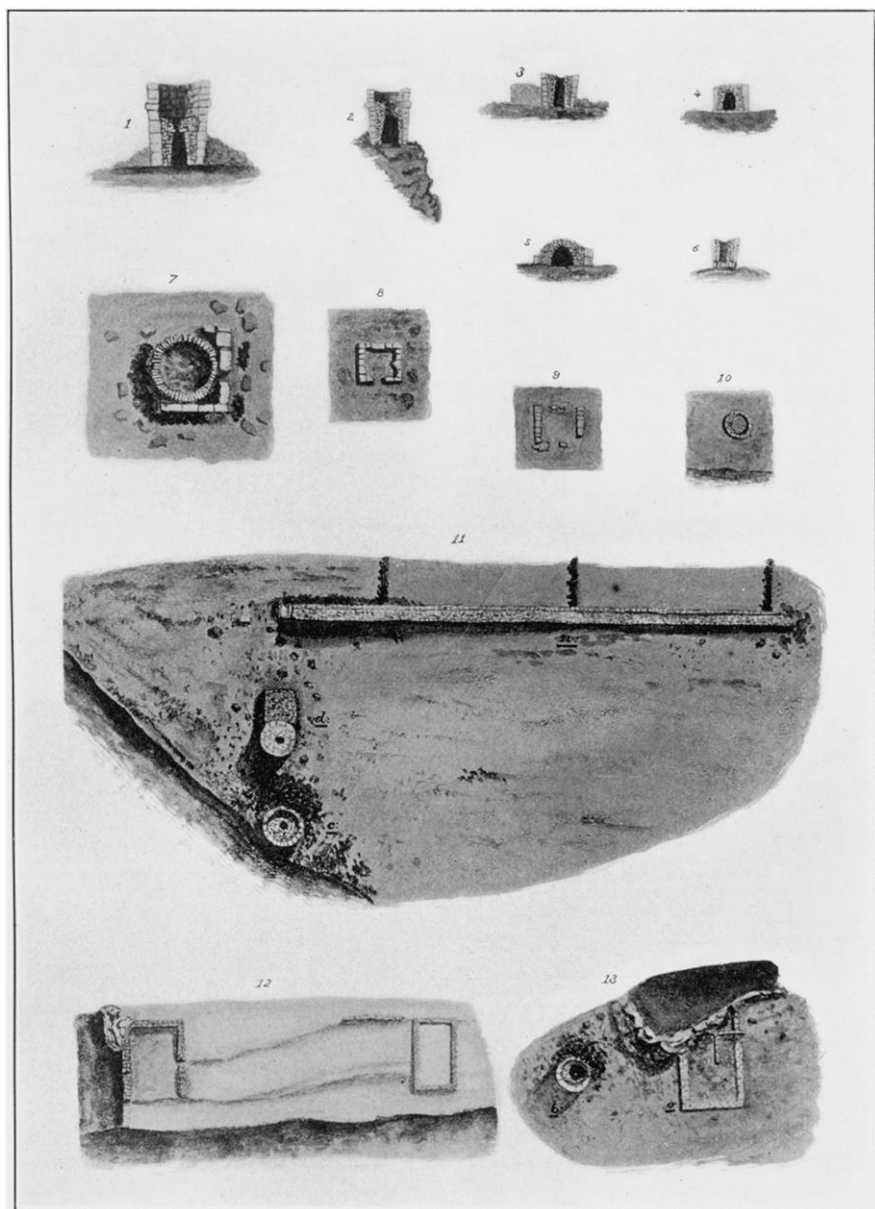
1. The great solidity of construction, obtained by closely fitting the heavy blocks forming the outer facing or armor, and by the massiveness of the lower part of the structure.

2. The great thickness of the walls encasing the main chamber.

3. The diminutive size of the apertures, both above and below. A child alone could pass through the upper orifice, while the largest of the doorways are not four feet square.

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<sup>1</sup> It is interesting to compare the form of the interior with the bottle-shaped underground cells so numerous in the ruins of Cajamarquilla, near Lima. These are well described by Squier, *Peru*, pp. 92-93. Mr Squier very appropriately calls them "granaries," adding (p. 94): "and were no doubt intended for the storage of household supplies." The towers of Sillustani resemble such granaries, except that they are above ground. Compare also the bottle-shaped structures of clay which Dr Lumholtz has described from cave-villages in northwestern Chihuahua (*Unknown Mexico*, vol. 1, pp. 58, 62, 64, 110).



STRUCTURAL DETAILS OF THE SILLUSTANI RUINS

(Scale 1 in. = 64 ft.)

From these facts it is apparent that the object which the builders of the chullpas had in view must have been the protection of their contents from moisture and the weather in general, as well as from depredation. This object they fully attained. When the interior was filled, ingress must have been almost impossible from the base; perforation of the massive walls within reasonable time was beyond any mechanical means at the Indians' command, and the smoothness of the exterior, the height of the wall, and the inverted cone shape would have rendered futile any attempt at scaling. Only by tearing down the towers was it possible to get at their contents.

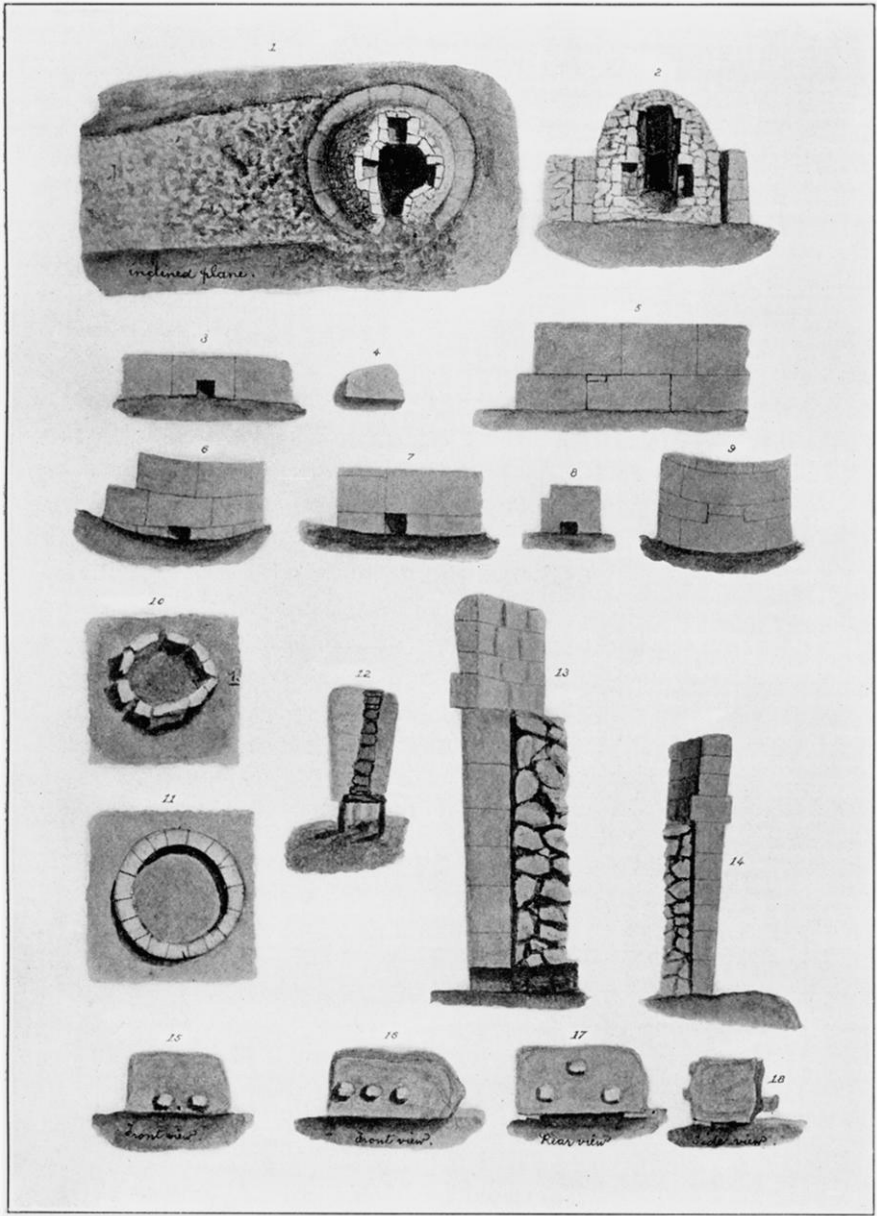
The core of rubble was manifestly first raised — a comparatively easy process. Plate VIII, 4, 5, represent stone chullpas begun, the inner chamber being already inclosed in the dome-shaped vault. This was kept closed at the top until the andesite facing had reached a height sufficient to give it solidity. Then the upper opening was made as seen in *d*, which shows the chullpa reared to the elevation of the main tier. The most difficult part of the work consisted in obtaining the blocks of andesite for the armor, their transportation, shaping, raising to the height required, and final smoothing.

East of the hacienda of Umayo a small grassy valley opens. Following this trough for about half a mile one reaches the foot of a rocky slope of andesite that continues into cliffs of moderate elevation. These cliffs have furnished the material for the outer casing of the stone chullpas at Sillustani. Parts of the cliffs are constantly falling down through erosion, but chiefly from the effect of lightning-strokes, for hardly a thunderstorm passes without sending one or more bolts at the ridge and its rocky edge. The plateau of Sillustani is higher than the andesite cliffs and more isolated, but its situation between two extensions of Lake Umayo renders it immune, for the electric discharges strike the water<sup>1</sup> instead of the promontories on which the ruins stand. This is a well-established fact, known to everyone familiar with the locality.

<sup>1</sup> We frequently observed the effect of an extensive sheet of water on electric discharges at Titicaca island previous to our visit to Sillustani, in the same year (1895). The buildings of the hacienda of Challa, on that island, where we dwelt for many months, lie on a sandy isthmus not 300 yards wide, between two coves of the lake, and thunderstorms are common. During one of these, lightning struck the water in our immediate vicinity twenty-seven times in the course of half an hour, but never the neck of land. The Indians assured us of the apparent invulnerability of Challa against thunderbolts.

It may therefore be said that the andesite used at Sillustani was quarried chiefly by lightning. At the foot of the cliffs many large stones lie about, rudely chipped and ready for transport. A number of such blocks are also scattered through the valley, between the cliffs and the hacienda, as if abandoned in transit. Plate IX, 16, 17, 18, represent three sides of the largest one seen by us, and figure 15 of this plate shows the front view of a smaller one. The former is nearly 12 feet long, 7 feet thick, and 6 feet in height. On its face (turned toward the ruins) protrude three knobs, about 18 inches long, curved upward so as to afford a fair hold. On the rear are three stubs. The knobs suggest the idea of pulling, wooden levers being applied behind. These knobs, protruding from the face of the blocks and also from the rear, are still seen on some of the partly cut stones lying about the towers. They seem to be, if not strictly peculiar to Inca architecture, at least a constant feature of it. I have here introduced a view of some of the ruins of Ollantaytambo, near Cuzco (plate XIII), on which the knobs are shown on many parts of the walls. The blocks thus abandoned on the way have stone props under them in the rear, so that by pulling, pushing, heaving, and upsetting, with the characteristic disregard of time consumed, the huge stones were moved from the cliffs to the plateau, where the work of cutting, placing in position, and smoothing was completed.

The tools employed in these processes no longer exist at Umayo and Sillustani, but we are sufficiently acquainted with the implements of the ancient inhabitants of Peru and Bolivia to safely assert that, for breaking and chipping, stone mauls and hammers were used. Andesite can easily be worked with bronze, or copper, and even with chisels of harder stone. Knowledge of the implements of the Quichua and Aymará, before iron was introduced by the Spaniards, sheds abundant light on the work performed at Sillustani. The smooth finish was obtained by simple patient attrition, and there is no necessity of resorting to hypotheses of artificial stone or tempered copper. Each block was finished on the ground as far as possible, but the final close fitting and the removal of the knobs were done after the blocks were placed in position in the walls. This is proved by courses of the masonry and even of sections of walls in which the



STRUCTURAL DETAILS OF SILLUSTANI RUINS

(Scale 1 in. = 16 ft.)

knobs still protrude. That the curve was last effected is shown by the upper tier, where the outer edges of the blocks *appear* to form a circle, when seen from below, but on closer inspection it is seen that the courses are *polygonal*, with as many sides as there are blocks in each.

So long as the stones had not to be raised above the second course, their placement was easily accomplished, but they are placed as high as thirty-five feet above the ground. Windlasses were not known to aboriginal Americans, but the ruins at Sillustani fortunately preserve examples of the devices by which the raising of the blocks of andesite was achieved. Plates VIII, II, and IX, I, exhibit the remains of inclined planes of rubble, one of them 215 feet in length (*u*), on which the blocks of stone were gradually moved up to the required elevation in the wall. The incline abuts against the tower and was raised as the building of the latter progressed. It must also be considered that the size of the blocks was reduced by cutting, and that the largest ones were always used in the lower courses. In addition, a device was adopted for diminishing the weight of the blocks. As seen in plates XI and XII, I, the ends of each block were hollowed out, and, once in place, these cavities were filled with small pieces of stone. This allowed the blocks to be handled with greater facility, while the subsequent filling practically restored their original weight.

The round and handsomely constructed chullpas are the least numerous, and only one of them is ornamented on the outside. The tallest of all (plate XI) has the figure of a lizard carved on its surface about midway between the base and the top.

The condition of the stone buildings at Sillustani leads to the inference that work on them was abandoned before completion. This is particularly the case with the quadrangular structures, all of which are unfinished. Their condition is not the result of demolition or of decay. The masonry is like that of the towers, well laid and nicely joined. The building *m*, shown in plates VIII, 7, and XIV, 2, was further advanced in construction than the others, part of its walls being 8 feet high. Some of the blocks are 9 to 11 feet long, 4 feet thick, and 6½ feet high. Only two sides were reared, one of which measures not quite 28 feet and the other more than 35 feet in length. Inside,

and touching the walls of the rectangle, is a circle of upright slabs, 38 inches in thickness, set without mortar, alongside of each other. On the longer side of the rectangle is an entrance 52 inches wide.

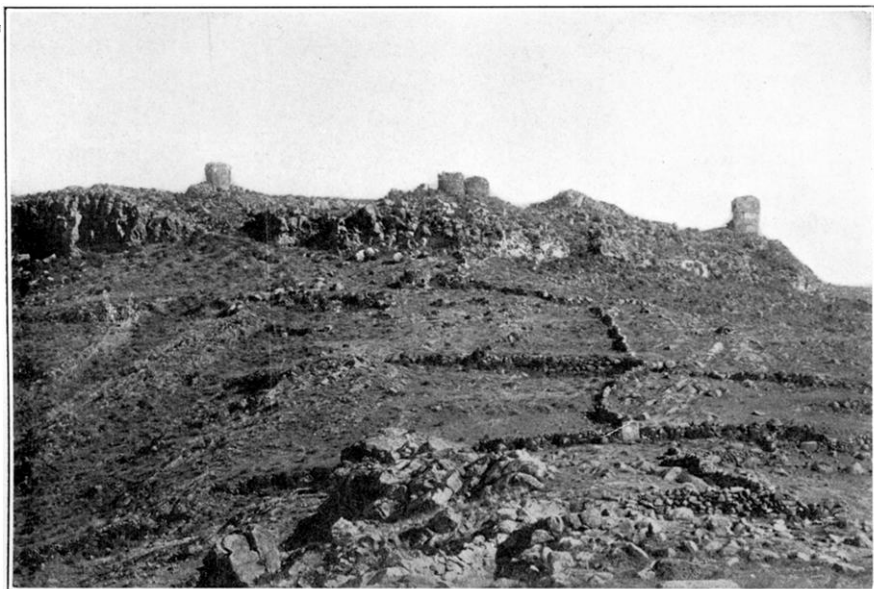
Quadrangle *k* (plates VIII, 8 ; XV, 1) has all four walls, measuring, respectively, 17.3, 17.3, 17.4, and 17.5 inches. The building, therefore, is nearly square ; but the opposite sides are not of exactly equal length, there being a difference of one and two inches, respectively. An entrance 50 inches in width is provided in one of the walls. The outer surface of the stones is as well cut and smoothed as any in Sillustani, but the blocks are not so large as those in building *m* (plates VII (3), *m* ; VIII, 7 ; XVI, 2).

Structure *l* (plates VII (3), *l* ; VIII, 9) is still less advanced in construction ; two sides are partly laid, and on the other side a few blocks only are in position. It should be stated that not a single building at Sillustani is provided with a foundation ; every structure rests on the surface of the ground, the size and weight of the stones alone insuring solidity.

Building *o* (plate VIII, 13) is in as unfinished a state as tower *b* near which it is situated. Only two feet of a wall of cut stone are visible ; its average width is 31 inches. This structure suggests the commencement of a dwelling. It resembles, in size and ground-plan, the houses of Inca origin which our excavations brought to light at Kasapata, on the Island of Titicaca.

Several other quadrangular structures, some of them nearly obliterated, are found here and there on the plateau. These differ but little from those described, and, judging by the first course of stones lying on the ground, they were to have been built in the same manner and of the same material.

I have purposely delayed mentioning certain details in the construction of the stone buildings for the reason that they exist in both the quadrangles and the towers. First, it was observed that, although the workmanship is far superior to that of any buildings outside of actual Inca settlements, it is not so accurate as it appears to be — angles are nearly but not absolutely true, the towers are only approximately circular, and the stones themselves not perfectly squared. Rule of thumb here guided the primitive artisan ; he did much better than the builders of the Aymará structures, but



1. Group of Circular Chullpas from *a* to *b*, as seen from Base of Plateau near the Hacienda.



2. Chullpas *c* and *d*.  
2. Chullpas *c* and *d*.



not so well as any European would have done. The moving of heavy masses was certainly an achievement, if we consider the means at the command of these builders, but to compare the results favorably with European building of the time is benevolent exaggeration. Superabundance of leisure was a prime factor. Where a block presented obstacles, the troublesome part was taken off, and another stone cut to fill the lack (plate ix, 5, 9). Such pieces were not inserted for decorative effect nor to increase the solidity of the structure; they are simply indications that each block was independently cut, not according to a definite plan, but to suit the immediate occasion. The doorways are usually an open space left between two blocks in a course (plate ix, 6, 7); but where the block was too high, a rectangular opening was cut through it (plate ix, 8). This shows that the small size of the doorways had a definite purpose. In the quadrangular structures (plate viii, 7, 8) there are, as before stated, wider entrances, but these were designed to afford access to round buildings within. In the case of rectangular building *m*, this circular structure had been commenced; in *k* there is strong probability that it was the intention to erect one also.

The singular edifice *i* (plate ix, 1, 2) is also in a half-finished condition. This building is unique among the ruins at Sillustani; it is dome-shaped, and the apex of the cupola approaches a true arch, a wedge-shaped keystone being set in *horizontally* to complete a circle (see plate ix, 2). The structure marked *i* is 10 feet in height and consists of two tiers, each of which has four niches so placed that the upper ones are not immediately above those below. The lower tier is pierced by an entrance 21 inches wide. The inside of this building is lined with spalls forming a thin, fairly smooth wall. The cupola varies in thickness; its outer diameter is about 12 feet, and the inside, in size as well as in its niches, recalls the basements of rectangular chullpas found on the peninsula of Huata in Bolivia, called *Chinkana* by the Aymará. Around the cupola a stone casing, like that of the towers, has been erected to an elevation of six feet, indicating that it was intended as a facing to the rubble core. An inclined plane 21 feet long, 12 feet wide, and 6 feet high (where it abuts against the armor), shows that the structure was abandoned before completion. The niches are not symmetrical;

their height varies from 40 to 44 inches, and other dimensions are also unequal. Of the probable purpose of this building we shall treat later.

There is another class of round buildings, and the most numerous of all. They differ from the chullpas described in being far less elaborate and considerably smaller. Plates VIII, 6; IX, 12, show two examples. The motive in these is the same as in the towers, but the outer finish is a coating of white clay, mixed with grass, and formed in irregular cakes, varying in thickness from two to three feet according to the structure. One of these "white towers" is 13 feet high and 48 feet in circumference. The interior forms a vault with rubble walls 8 feet high, 7 feet in diameter below, and  $4\frac{1}{2}$  feet at the top. Where completed, these white towers are closed above with heavy slabs covered with rubbish and some clay; hence there is no neck as in the stone chullpas, and the interior is an imperfect cupola. We could not detect an opening at the bottom. The structure rests on a base of well-cut andesite blocks eleven inches thick, showing that these clay-covered chullpas were erected by the people who built the other ones, and for a similar purpose.

Some of these white towers stand in the valley near the cliffs whence the andesite was obtained, and on ridges and slopes round about. We could not examine any of those farther away from Sillustani, but plates VIII, 10; IX, 10-12, show the base and section of one that may be regarded as typical. All that remains of the lower portion is a circle of rough slabs resting on four upright stones three feet high. The wall (11 inches thick at the base and 30 inches at the top) rises ten feet above this circle and is constructed of rudely superposed slabs coated inside with clay mixed with *Puna* grass. The elevation of this structure on stone posts may have been for the purpose of protecting the contents from moisture, as the bottom of the valley is sometimes flooded.

The much ruined structures forming group *r* (plate VII, 3), on the extreme northeastern spur of Sillustani, are in such condition that little can be said about them. Most of them appear to have been circular chullpas of the clay-faced variety. One building may have been a rudely constructed house of three or four rooms and with rounded corners. The artifacts found there were potsherds, both



CHULLPA A

of the Cuzco type and of the ruder kind attributed generally to the Aymará Indians. We also found skulls of both males and females, the former artificially flattened frontally.

Finally, on the ridge south of the hacienda, there stand the few buildings marked *p* on the general plan (plates VII (3); VIII, 12). In regard to these I do not feel justified in asserting that they are aboriginal, nor can I affirm the contrary. The walls are built of roughly broken volcanic stones from 24 to 33 inches wide, laid in mud. No tradition as to their origin could be obtained, and while they may have been designed as Indian dwellings, begun and abandoned before completion like the others on the plateau, they may also be of Spanish construction.

With few exceptions, the buildings at Sillustani were unfit for abode. Only groups *o* and *p* (provided the latter are ancient), and perhaps some of group *r*, bear the character of dwellings. All the others, except *i*, are so constructed as to indicate that they were designed to shelter and preserve, as carefully as possible, materials of the nature of which we have no knowledge. Had it been possible for us to open one or more of the white chullpas, we might know something of their contents, but permission was unobtainable. The belief that valuable objects of metal are therein concealed is deeply rooted in the minds of the people, although there is no authentic recollection of the finding of any "treasure" at Sillustani. Many of the towers were partly torn down and searched long ago, but no tradition in regard to what was found in them was obtainable by us. The universal opinion, published and unpublished, is that the towers of Sillustani were designed as sepulchers, burial towers, or funeral monuments, and we held the same opinion ourselves.

One point is certain: these towers were, so to say, hermetically closed, or were built with the view of so closing them as soon as filled. It is also evident that they could not be opened or entered except with considerable difficulty, and that they were carefully guarded against such intrusion is shown by their massive construction. The towers cannot be scaled, and the aperture above is too small to admit an adult person. The opening below is equally contracted, and if the interior were closely packed it was practically

inaccessible. To break in from the outside was beyond the power of Indians within a reasonable time. Hence the contents of these towers must have been of such value to the builders that they exercised every effort to preserve them, as is evidenced by the massiveness of the walls, the smooth finish which made scaling impossible, and their inverted conical shape. Mortuary monuments they cannot have been unless, as is generally supposed, they were designed to receive a number of corpses. But the question arises, How could corpses have been introduced? The opening above is entirely too small, and while the aperture below might have given passage to an Indian of small stature, such a mode of burial is completely at variance with what is known of the mortuary customs of both the Quichua and the Aymará; and to fill the chamber with dead bodies would have been a very long and arduous task.

A question intimately related to that of the contents of these towers is that of the builders of the Sillustani structures. There is no known tradition in which the place is mentioned, and the name Sillustani nowhere appears in books or documents of the period of early Spanish colonization. Hence it might be supposed that these buildings, like those of Tiahuanaco, must be attributed to some tribe the record of which is lost. Although we search in vain for data in regard to Sillustani, we meet with positive information concerning a site called *Hatun-Colla*. This place (or rather Kolla) lay close to Umayo, and while there exist some ruins there which Squier has described,<sup>1</sup> nowhere in the vicinity are there any of the type and importance of those at Sillustani. Cieza de León, who visited Hatun-Kolla in 1540, speaks of it as follows:

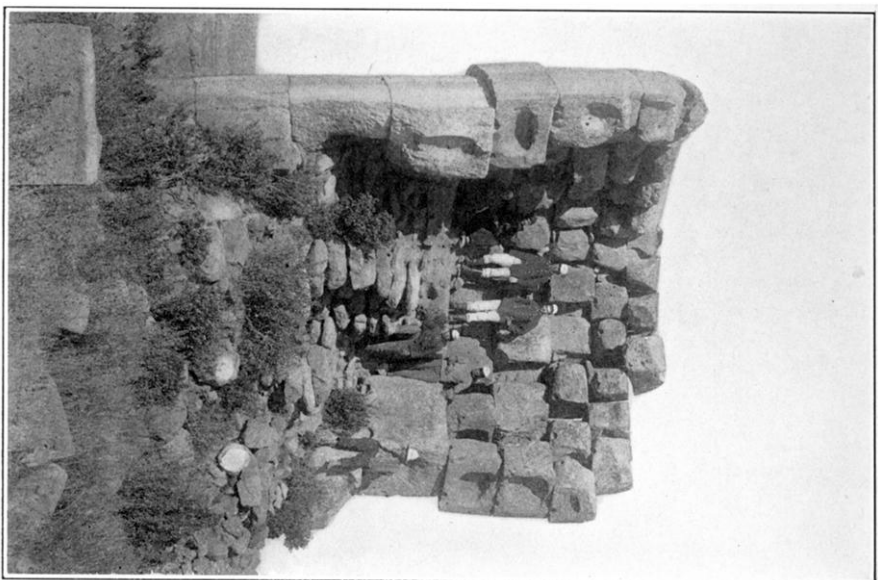
“From Pucara to Hatuncolla there are something like fifteen leagues; in their neighborhood are some villages, as Nicasio, Xullaca and others. Hatuncolla, in times past, was the chief thing of the Collas . . . and afterwards the Incas embellished the village with an increased number of edifices and a great number of depositories, where, by their command, was put the tribute that was brought from the country around.” . . .<sup>2</sup>

Garcilasso de la Vega also mentions the construction by the Incas of edifices at Hatun-Kolla.<sup>3</sup>

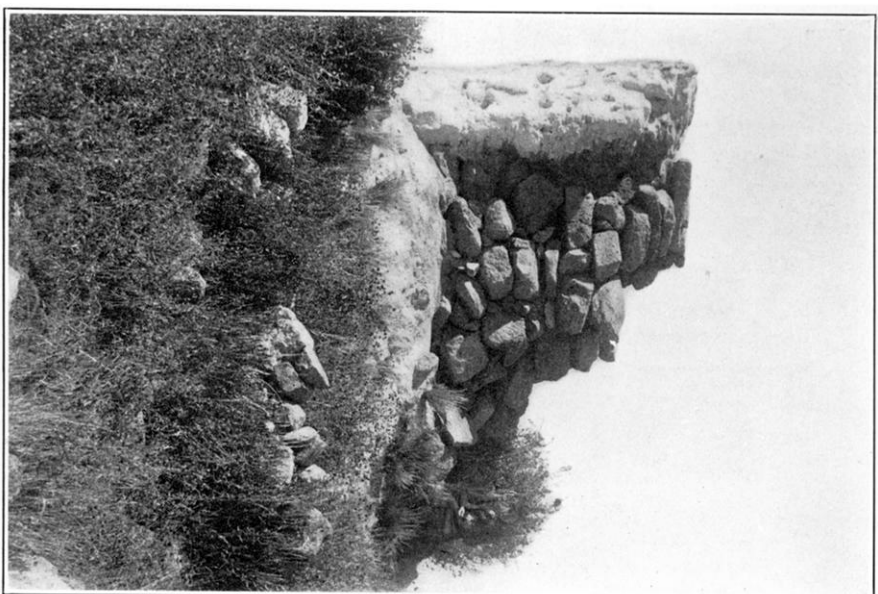
<sup>1</sup> *Peru*, p. 384 et seq.

<sup>2</sup> *Primera Parte de la Crónica del Perú*, cap. CII, p. 445.

<sup>3</sup> *Comentarios reales*, Primera parte, 1609, lib. II, cap. XIX, f. 45.



1. CHULLPA B



2. WHITE TOWER ON EDGE OF PLATEAU

Herrera certainly copied Cieza de León, and perhaps other sources of which, as yet, we have no knowledge. He mentions, although not very clearly, the construction by the Incas of edifices in what was then called *Collasuyu*,<sup>1</sup> and it seems clear that these structures were in the vicinity of Hatun-Kolla.

The architecture and masonry at Sillustani bear the stamp of Inca work. They resemble structural remains at Huánuco in central Peru, on the island of Koati, and also the quadrangular towers of well-fitted stones at Kalaki on the shores of Lake Titicaca. The edifices in the latter two localities are clearly of Inca construction — there is abundant evidence to that effect. In regard to Huánuco it is stated that the buildings (of large, nicely fitted, and smoothed blocks) are also of Inca origin. The Indians who inhabited Hatun-Kolla, before the Inca came in contact with them, built with much less care and regularity. It is more than likely that by the structures at Hatun-Kolla those at Sillustani are meant by Cieza. The two places are very near each other, and the remains of Hatun-Kolla can not be compared in importance with the former. Hence, also, it is not improbable that the name Sillustani is comparatively modern, otherwise Cieza would certainly have known of it, for he must have seen the ruins when at Hatun-Kolla. Even the white chullpas are of Inca origin.<sup>2</sup>

<sup>1</sup> *Historia general de los Hechos de los Castellanos en las Islas y la Tierra firme del Mar Océano*, 1726, vol. II, libro II of dec. V, p. 73. The Jesuit Bernabé Cobo, who lived in the Peruvian and Bolivian highlands from 1615 to 1618 (or 1621, if Arequipa is included in the sierra, by Enrique Torres Saldamando, *Los Antiguos Jesuitas del Perú*, Lima, 1885, p. 99), also mentions ancient buildings formerly serving as storage rooms, in his *Historia del Nuevo Mundo* (Sevilla, 1902, vol. III, lib. XII, cap. xxx, p. 254): "Edificaban de ordinario estos depósitos i almacenes fuera de poblado, en lugares altos, frescos y airosos, cerca del camino real, cuyas ruinas vemos hoy al rededor de los pueblos en los collados y laderas de los cerros; eran muchas casas cuadradas y pequeñas como aposentos ordinarios, a manera de torrecillas, desviades unas de otras dos i tres pasos y puestas en hilera con mucho orden y proporción; en partes eran más, y en partes menos, segun la necesidad lo pedia; . . . A veces eran las hileras de veinte, treinta, cincuenta, y mas casas, y como estaban en sitios altos y por orden, parecian bien, pues aun lo parecen hoy las paredes que en algunas partes están en pié y tan enteras que no les falta más que el techo. El asenta en lugares altos estos depósitos lo hacian los Indios para que lo que en ellos se guardaba estuviere defendido de las aguas y humedad y seguro de toda corrupcion." Cobo also speaks of larger and smaller *depósitos*, but does not mention circular ones.

<sup>2</sup> Cieza, *Primera Parte*, p. 429: "Enlo que llaman Guanuco habia una cassa real de admirable edificio, porque les piedras eras grandes y estaban muy solidamente asentadas."

I would also add that the larger proportion of the potsherds found are of the type of Cuzco pottery, which is *sui generis* among Peruvian and Bolivian ceramics. This is another indication in favor of the assumption that the builders of Sillustani were Incas.

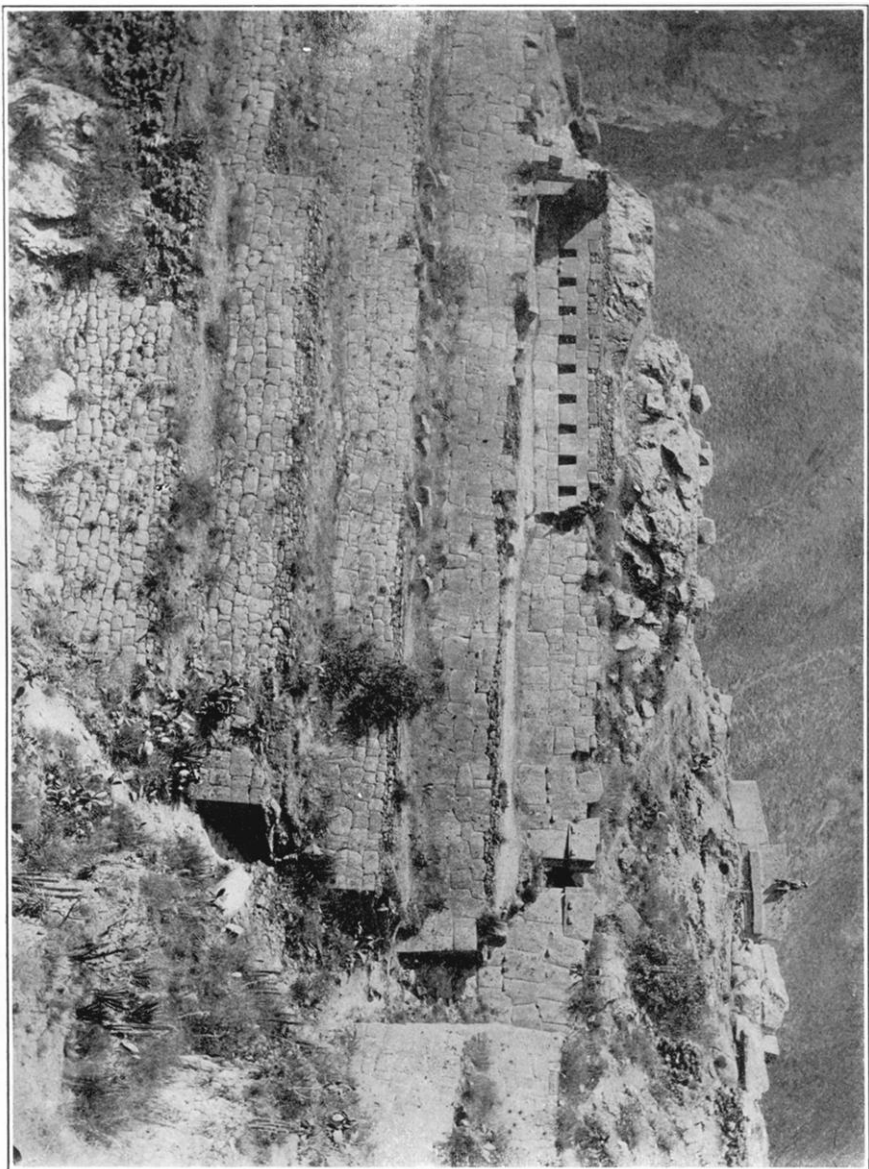
Stone towers as military constructions are not common among the ruins of Peru and Bolivia. There are a few on the coast, in positions indicating that they were lookouts. It is manifest that those at Sillustani were not for observation, still less for residence. They must have been intended for either burial-towers or store-houses.

The Aymará Indians sometimes buried their dead in structures, resembling quadrangular one-story towers, built of mud and rubble,<sup>1</sup> also of cakes of clay mixed with straw, just as are the walls of the white chullpas. Rectangular, but not circular, chullpas are very numerous on the Bolivian tableland, and in our examination of hundreds of them we invariably found that they had simply been the dwellings of the people, whose only building materials are stone and mud, for wood is entirely beyond reach in those vast treeless expanses. But the Aymará, like the forest tribes on the eastern slope of the cordillera, in the great basin of the Beni, to this day, formerly buried their dead *beneath the floors of their dwellings*, continuing to live directly over the remains of their departed. Even when a chullpa becomes deserted, it is still used for burial. A certain number of the white chullpas at Sillustani are completed and still absolutely closed, hence were not used as dwellings. The Incas buried their dead in a sitting posture, and separately. Moreover,

He also mentions: "y habia depósitos y aposentos de los ingas, muy bastecidos." It should be observed that the tendency of the Spanish chroniclers is to attribute to the Incas all edifices that are unusually well finished. Garcilasso de la Vega (*Histoire des Incas*, vol. II, p. 274) says in regard to Huánuco: "Ils y fondèrent une Maison de Vierges choisies." Herrera (*Historia general*, vol. III, dec. VII, lib. IV, p. 69) copies Cieza, adding slightly to the exaggerations of the latter and of Garcilasso. See also Squier, *Peru*, pp. 215-216 et seq.

<sup>1</sup> Cieza (*Primera Parte*, p. 443) describes clearly the *chullpas* of the Collao. "Por las vegas y llanos cerca de los pueblos estaban las sepulturas destes indios hechas como pequeñas torres de quatro esquinas, unas de piedra sola y otras de piedra y tierra, algunas anchas y otras angostas; en fin, como tenían la posibilidad las personas que las edificaban. Los chapiteles de algunos estaban cubiertos con paja, otros con unas losas grandes; y parecióme que tenían las puertas estas sepulturas hacia la parte de levante." Cieza did not examine closely the structures he describes, not having time for it; yet it is clear that he did not mean the edifices at Sillustani.





INCA RUINS AT OLLANTAYTAMBO, NEAR CUZCO

as above pointed out, the corpses could not have been placed in the towers from above, and from below it would have been a most tedious and difficult task to fill the chamber with squatting dead through the tiny doorways, which seem to be made rather for taking out small objects. The open space in the second tier afforded neither shelter nor convenience for human remains.

The statement by Cieza that the Inca erected *depositories* near Hatun-Kolla is significant. The Sillustani buildings cannot have been anything else but such depositories. There is no evidence of their having been depositories of the dead, and such was not the mode of burial either of the Aymará or of the Cuzco people; hence if they were depositories, it was of *stores*. The tribute which the Inca obtained on the tableland consisted of what could be raised on it, that is, potatoes (made into *chuñu*), *oca*, *quinua*, and a little maize. The bottle-shaped interior of the chullpas is as if made for receiving just such produce. A chullpa could readily be filled from above with chuñu and the like by pouring it through the orifice, and when the stores had to be used they could as easily be extracted from the small opening after removal of the block which closed it.

To those not familiar with the country and with the mode of life of its aborigines, it may seem improbable that such elaborate structures should have been erected simply for preserving potatoes and other produce, but before the Spanish colonization, and even to-day, food was and is much more important to the Indians in these cold and barren regions than what now is called treasure. The Inca had no standard medium of exchange, no currency or "money." Gold and silver were less indispensable to them than potatoes, quinua, and other products, for they could use the former only for decoration and as ceremonial offerings, whereas they depended on the vegetables for subsistence. Sillustani, therefore, as Cieza indicates, consisted of a cluster of storehouses erected by the Inca within the Aymará range for preserving tribute. From the Aymará of Hatun-Kolla the Inca had nothing to fear, and against extensive depredation the massive character of the storage tower was sufficient protection, so that it was not even necessary to guard or garrison the site. Such Inca magazines were established at intervals throughout Peru and they were always associated with buildings of a ceremonial character.

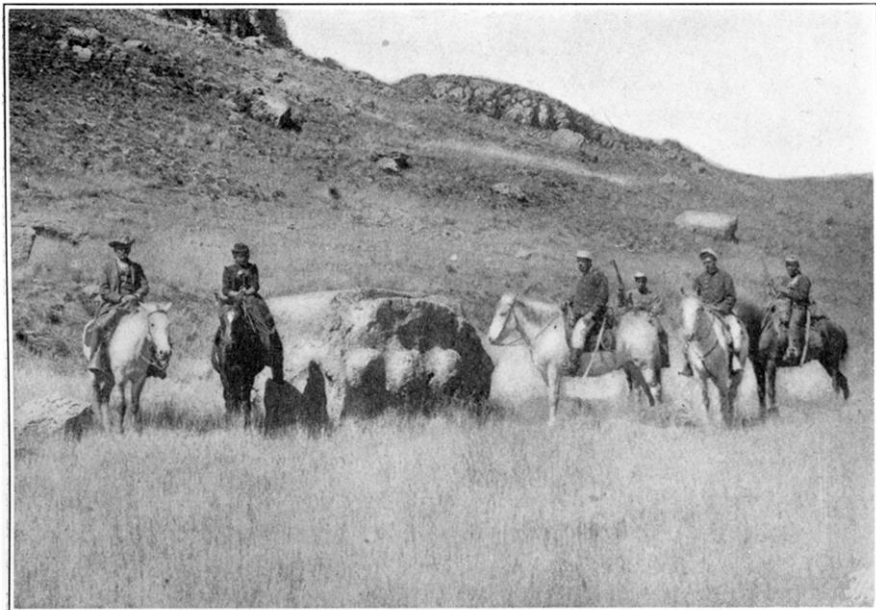
To these latter the structure marked *i* (plates VII (3); IX, 1, 2) must be referred. Its niches, its smaller size and larger entrance, make it appear as an Inca place of worship. On the peninsula of Huata, in Bolivia, there are structures with an analogous interior plan, but they are built underground, beneath square towers of Inca make. These *chinkanas*, as the Aymará call them, therefore appear to have been storage houses and chapels combined. At Sillustani a subterranean structure was out of the question. Building *i* was a place of worship such as we are told (with much exaggeration as to size and decoration) everywhere accompanied Inca storehouses.

The white towers are also of Inca construction. They could have been much more rapidly built than the towers of stone, and it is therefore possible that they were erected as temporary storehouses until the more solid ones were ready for use. The quadrangular structures were in part magazines also, and in part (as *o* and possibly *p*) dwellings. There was no need of permanent military occupancy of the site. Inca "garrisons" nowhere were kept, not even in the great refuge-place of Cuzco, the *Sacsahuaman*.

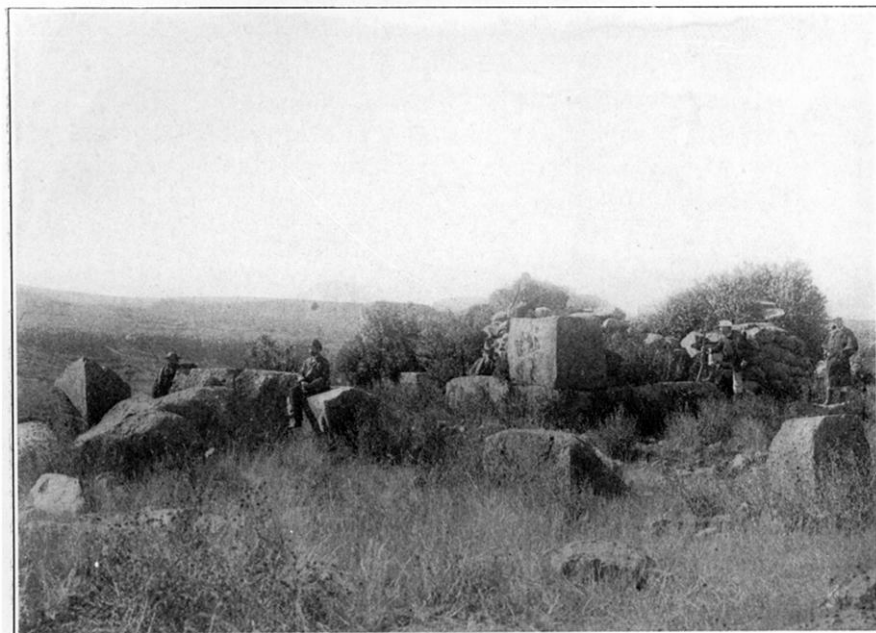
As already stated, work at Sillustani was interrupted and abandoned for some cause or other and never resumed. This may have been in consequence of the appearance of the Spaniards at Cuzco in 1534, but it is more likely that the abandonment occurred before or during the time that warfare between the Inca of Quito and those of Cuzco had thrown in confusion everything in the south. Under any circumstance it is probable that work on the edifices was begun in the second half of the fifteenth century and abandoned in the first third of the sixteenth.<sup>1</sup>

We have yet to consider another class of structures—those marked *q* on plates VII (3); VIII, 12, of which there exist a group of

<sup>1</sup> The series of Inca head war-chiefs becomes positive only with Tupac Yupanqui, the third from the last (counting Huascar as the last and ignoring Ata Hualpa, who was an Indian from Quito). Previous to Tupac Yupanqui there is contradiction and confusion among the chroniclers and in the traditions. Tupac Yupanqui subjugated the Collas, or, what is just as likely, they confederated, in his time, with the Cuzco tribe. This took place in the second half of the fifteenth century. To him also are attributed the buildings said to have existed at or near Hatun-Kolla. The appearance of the Quito warriors at Cuzco and the great confusion occasioned thereby among the Incas occurred a few years prior to 1531, when Pizarro landed on the Peruvian coast. Quotations are superfluous, the facts being too well established.



1. Large Block of Andesite at Foot of Quarry, Showing Knobs or Stubs on its Face.



2. Quadrangular Structure *m*.

four at the foot of the cliff on which the largest chullpa (*a*) stands, while an isolated one is on the slope of the northeastern promontory. These are called *inti-huatana*, translated "place where the sun is tied up." Leaving aside etymology, it first strikes one that these circles are on the flanks instead of on the plateau, where they might be expected if designed for astronomical purposes. It is also singular that they are not truly circular (see plate VII, figure 1); indeed, they do not even approach geometrical accuracy. The "circle" proper is formed by upright slabs, little worked if at all. The total length of the curve from *e* to *f* is 84 feet, and the average height of the stones three feet. Around this "circle" was a ring of handsomely cut slabs laid flat and having an aggregate width of about two feet. Most of this stone ring is destroyed, but what remains distinctly shows a tendency to ornamentation (plate VII, 1, 2). The entrance (*b*), with its upright stone-posts (*c*, *d*), is a little more than two feet wide, and the well-cut block in front of it has two low steps. The whole is not symmetrical, but is fairly accurate for work done by "rule of thumb."

It is difficult to understand how such contrivances as these circles, situated as they are, and of such inaccuracy in form, could have been of use for astronomical purposes. It is conceivable that a slender cone (tall as at Cacha, or a mere stub as at Pisac) might have been serviceable for approximately determining equinoxes by noting the days when the sun shed its full light on the top about noontime; but, aside from the fact that it is very doubtful if the Indians of Peru ever paid much attention to the equinoxes,<sup>1</sup> the "circles" at Sillustani exhibit nothing to indicate that they could have been used for such a purpose.

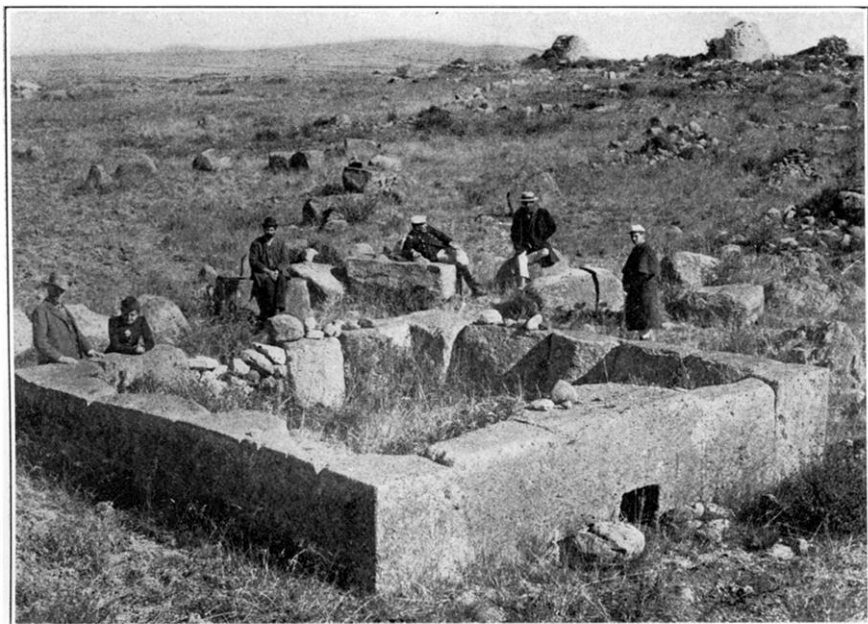
It is equally difficult to conceive that the circular structures could have had other than a ceremonial object, but what rites were performed within them can only be conjectured. There are a number of such circles, less carefully built, on the height called Kajopi, above the village of Huata in Bolivia. Kajopi is 1,600 feet above

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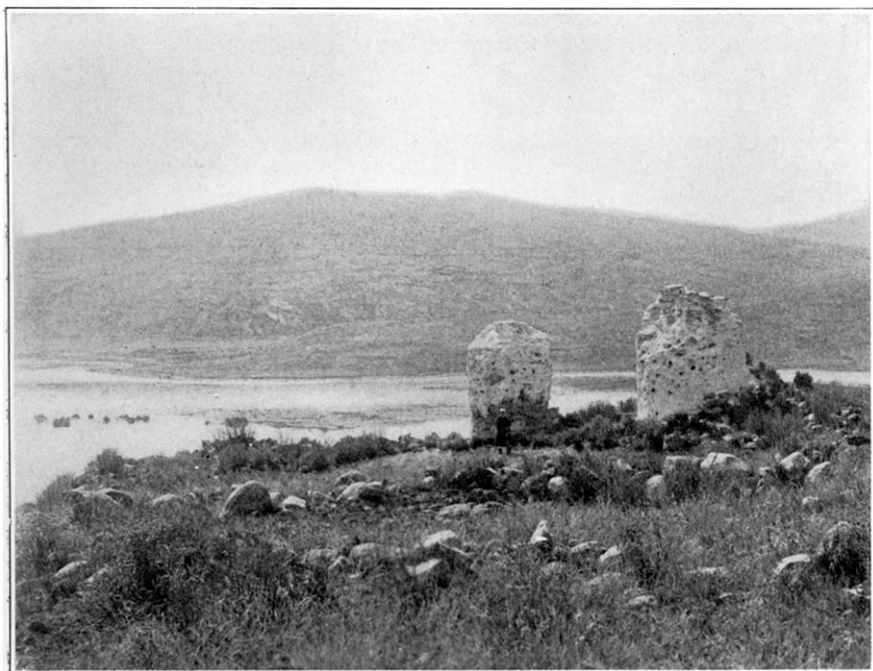
<sup>1</sup> The equinoxes are not well marked by meteorological phenomena in the highlands of Peru and Bolivia. The Indians barely pay attention to them, whereas the solstices are more easily noted. What Garcilasso and others say of ceremonies performed at the time of the equinoxes must be taken with allowance.

Lake Titicaca, toward which it descends in partly vertical cliffs. The top is to-day a resort for wizards, and the circles (which, be it said, lie entirely on the inclines and therefore could not have been of any use for astronomical determinations) are regarded with superstitious dread, offerings constantly being made there. The circles at Sillustani consequently seem to have been for some sacrificial purpose, and as such I shall regard them until evidence to the contrary is presented. These and the small building (*i*) appear to have been the only structures at Sillustani designed for ceremonial use.

Sillustani, therefore, presents the characteristics not of some ruin of very ancient date but of a cluster of buildings reared by and for the Inca of Cuzco for storage, and not earlier than the latter part of the sixteenth century. Few of the better constructed edifices are finished. The general condition, the evidences of mechanical contrivances for hoisting, the building stones abandoned by the roadside while under transportation, all prove that the work suddenly ceased for some cause unknown, but which was not necessarily the appearance of the Spaniards. Sillustani is perhaps one of the most instructive sites at which can be studied the strides made by the Inca in the art of building. The ceremonial structures, especially *i*, are of particular interest as the best-preserved specimens of Inca religious architecture thus far examined.



1. Quadrangular Structure &.



2. Group of White Towers Overlooking Lake Umayo.